Surname		Other Names	
Centre Number		Candidate Number	
Candidate Signature			

General Certificate of Secondary Education
June 2004

MATHEMATICS (MODULAR) (SPECIFICATION B)   33003/HB
Module 3 Higher Tier Section B

Wednesday 30 June 2004 9.45 am to 10.25 am

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In addition to this paper you will require:
   mathematical instruments.
You must **not** use a calculator.

Time allowed for Section B: 40 minutes

Instructions
- Use blue or black ink or ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions in the spaces provided.
- Do all rough work in this booklet.
- You may **not** use your calculator in Section B. Your calculator must remain on the floor under your seat.
- When you have answered Section B you may work again on Section A but you may **not** use your calculator. It must remain on the floor under your seat.
- At the end of the examination tag Section A and Section B together with Section A on top.

Information
- The maximum mark for Section B is 32.
- Mark allocations are shown in brackets.
- Additional answer paper and graph paper will be issued on request and must be tagged securely to this answer booklet.

Advice
- In all calculations, show clearly how you work out your answer.

33003/HB

Answer **all** questions in the spaces provided.

10 Liz has 60 postage stamps.
The ratio of the number of first class stamps to the number of second class stamps is 2 : 3.

How many second class stamps does Liz have?

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Answer .... *(2 marks)*

11 (a) Find an approximate value of $\dfrac{296 \times 8.13}{0.39}$

You **must** show all your working.

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Answer .... *(3 marks)*

(b) Work out $\quad 4\frac{1}{3} - 1\frac{2}{5}$

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Answer .... *(3 marks)*

(c) Find the value of $\quad \dfrac{\frac{1}{4} \times 16}{\frac{1}{27} \times (3)^2}$

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Answer .... *(3 marks)*

(d) Subtract 2.9×10^5 from 4.27×10^6

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Answer .... *(2 marks)*

$\dfrac{}{13}$

Turn over ▶

12 (a) Complete the table of values for $y = 3x^2 - 6$

x	–3	–2	–1	0	1	2	3	4
y	21	6	–3	–6	–3		21	42

(1 mark)

(b) On the grid below, draw the graph of $y = 3x^2 - 6$ for values of x between –3 and +4.
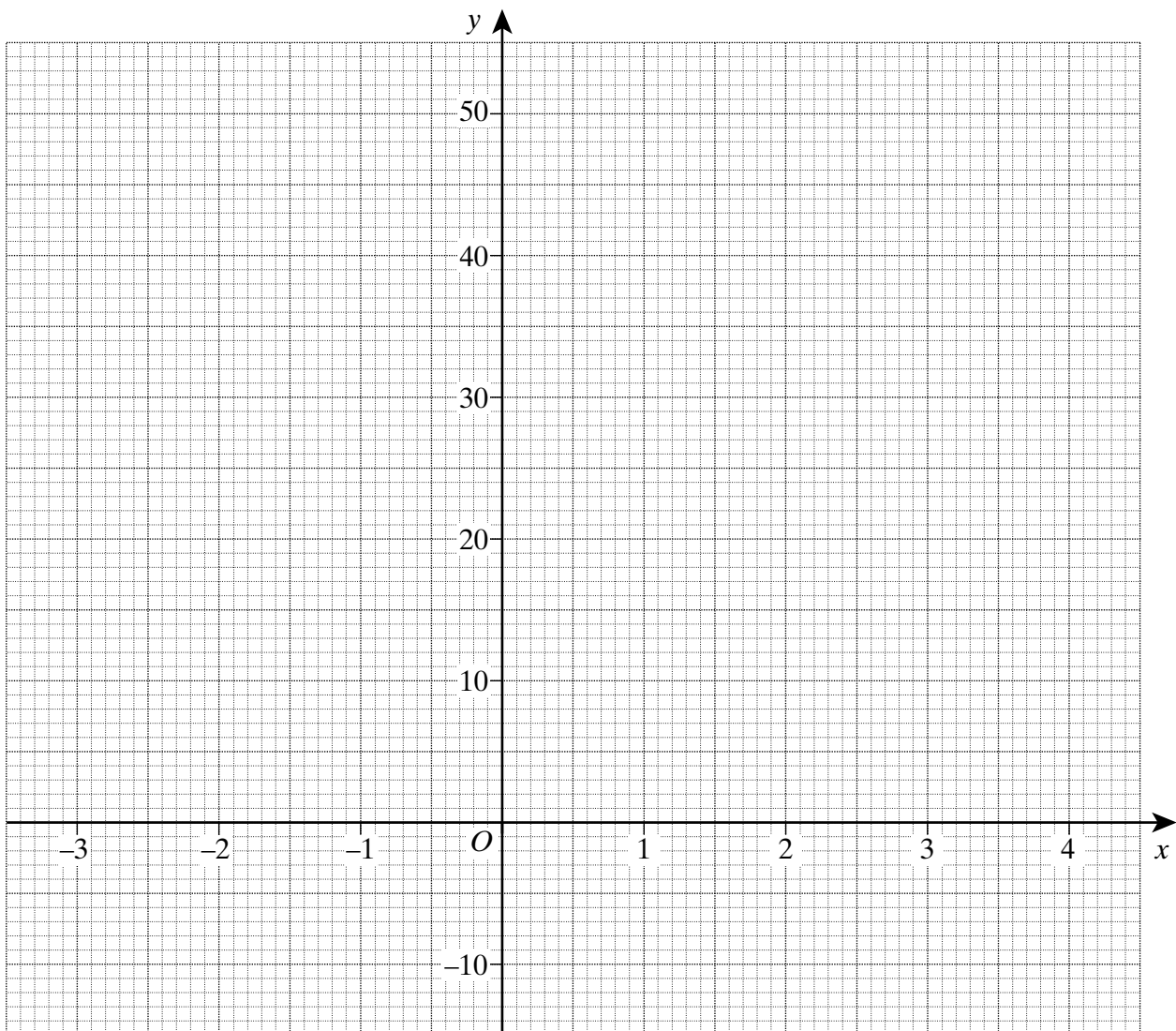
(2 marks)

(c)   Use your graph to write down the solutions of $3x^2 - 6 = 0$

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Answer   .... and ....   *(1 mark)*

(d)   By drawing an appropriate linear graph, write down the solutions of

$$3x^2 - 5x - 6 = 0$$

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Answer ....   *(3 marks)*

TURN OVER FOR THE NEXT QUESTION

APW/6Q04/33003/HB

13 (a) Simplify $\sqrt{8} + \sqrt{50}$

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Answer .... *(2 marks)*

(b) Hence simplify

$$(\sqrt{8} + \sqrt{50})(\sqrt{24} + \sqrt{54})$$

giving your answer in its simplest surd form.

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Answer .... *(3 marks)*

14 (a) Work out $49^{\frac{1}{2}} \times 5^{-3}$

Give your answer as a fraction.

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Answer .... *(2 marks)*

(b) Calculate $\dfrac{4^7}{4^{-2}}$ giving your answer in the form 2^n.

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Answer .... *(2 marks)*

(c) Work out the value of $81^{-\frac{3}{4}}$

Give your answer as a fraction.

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Answer .... *(3 marks)*

END OF QUESTIONS

THERE ARE NO QUESTIONS PRINTED ON THIS PAGE